

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
7 November 2002 (07.11.2002)

PCT

(10) International Publication Number  
**WO 02/089517 A1**

(51) International Patent Classification<sup>2</sup>: **H04Q 7/38** (74) Agent: PAPULA OY, P.O. Box 981, Fredrikinkatu 61 A, FIN-00101 Helsinki (FI).

(21) International Application Number: **PCT/FI02/00298**

(22) International Filing Date: 9 April 2002 (09.04.2002)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:  
20010768 11 April 2001 (11.04.2001) FI

(71) Applicant (*for all designated States except US*): SONERA OYJ [FI/FI]; Teollisuuskatu 15, FIN-00510 Helsinki (FI).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): LINDQVIST, Anssi [FI/FI]; Sofianlehdonkatu 11 B 12, FIN-00610 Helsinki (FI). PIPPURI, Sami [FI/FI]; Johan Bockin kuja 6 A 3, FIN-00720 Helsinki (FI). POHJANEN, Petri [FI/FI]; Välkylä 4 A 10, FIN-90100 Oulu (FI). RÖNKKÖ, Hannu [FI/FI]; Löydösmäki 11 B 13, FIN-02770 Espoo (FI). KETONEN, Pasi [FI/FI]; Impivaarantie 10-12 F 18, FIN-02880 Veikkola (FI).

(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI-patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

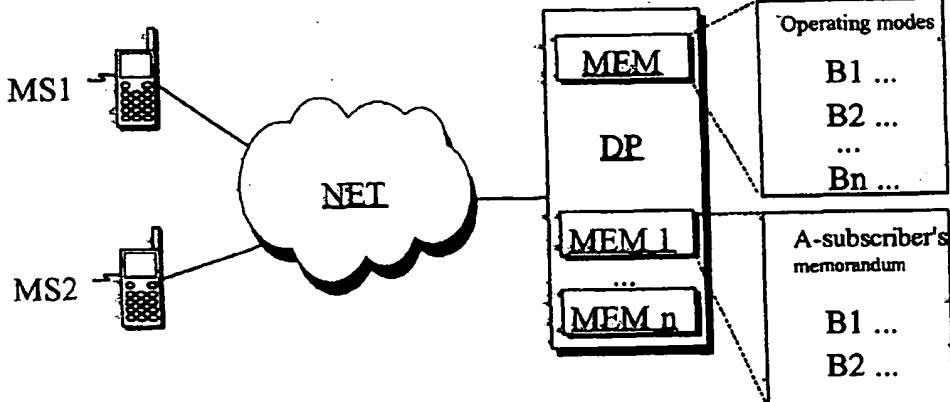
— with international search report

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR USING USE STATUS INFORMATION OF TERMINAL EQUIPMENT



**WO 02/089517 A1**



(57) Abstract: The invention relates to a method for determining, storing and utilizing terminal operating mode data in a telecommunication system, in which method the user can set his terminal into two or more operating modes. According to the invention, the operating mode of the terminal is changed; information regarding the change of operating mode is sent from the terminal to a telecommunication server, using a technique employed in the telecommunication network available; and the change of the operating mode of the terminal is saved on the telecommunication server.

**BEST AVAILABLE COPY**

WO 02/089517 A1



- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD AND SYSTEM FOR USING USE STATUS INFORMATION OF  
TERMINAL EQUIPMENT

FIELD OF THE INVENTION

5 The present invention relates to telecommunication technology. The present invention concerns a method and a system for the utilization of operating mode data of a user's terminal.

10 BACKGROUND OF THE INVENTION

The users of telecommunication terminals in telecommunication networks and especially mobile communication networks are practically always reachable. The operating mode of mobile stations can be changed 15 e.g. by using so-called profiles. If the user of a terminal is e.g. attending an important meeting, he may have defined a specific "meeting" profile, in which the mobile station is in a silent operating mode and will only alarm on calls coming from predetermined 20 numbers. The profiles associated with a terminal are defined by the user of the terminal by means of the terminal itself.

Reference WO 00/42784 (Peltola et. al.) discloses a solution in which the user can change the state (active/passive) of his line by separately contacting the network and giving corresponding notice to 25 a predetermined server.

Reference WO 97/41654 (Tsoukas et. al.) discloses a solution in which a customer profile associated with the customer is stored in a database provided in the telecommunication network. The customer profile may contain various service requests dependent on time and/or place. The data stored in the customer profile are of a triggering nature. In other words, 30 35 the customer can define various schedule conditions and limits e.g. for stock prices. When the conditions

thus set are met, the server automatically sends to the customer's terminal a corresponding message, e.g. a short message (SMS, Short Message Service) as used in a mobile communication network.

5       The solution presented in reference WO 97/41654 allows the provision of advertising or services in accordance with the profile defined or the location data. The solution according to this reference does not allow the focus of advertising or services to 10 be applied to the actual state of the terminal, but services are only applied on the basis of information stored beforehand in the profile.

In connection with a telecommunication network, e.g. a mobile communication network, it is possible to define a reachability management system. The 15 user can define his own profile in the reachability management system and form a reachability chain as he likes. The reachability chain used at any given time has been defined on the basis of rules stored in the 20 profile. The user can also manually set a given reachability chain into an active state by sending a specific message to the reachability management system.

The applications contained in terminals, e.g. mobile stations and PDA devices (PDA, Personal Digital Assistant), are of a static nature, in other words, 25 the applications contained in the terminals are unchangeable. Mobile stations provide fairly limited chances of modifying the properties of the mobile station. Possible modifications are mainly based on user 30 profiles as referred to above. In practice, the user can only change the type of the ringing tone of his mobile station to suit the time and place, but there is no possibility to adapt the variety of applications contained in the terminal to the current situation by 35 changing the applications in use, the user interface or the exterior.

It is possible to provide advertisements and services based on place data or time definitions to a terminal. In a telecommunication network, it is possible to define a user profile can on the basis of which 5 advertisements or other services are sent to the user. In the profile, it is possible e.g. to define certain times of the day at which desired information is transmitted to the user's terminal. However, the above-described functionalities do not in any way take 10 into account the actual active state of the terminal.

A specific problem at present is also the fact that the party trying to reach a B-subscriber does not know whether the B-subscriber in question is able to receive a connection set-up request, an advertisement or service. Thus, the party (A-subscriber) 15 trying to contact a terminal user (B-subscriber) has no chance of knowing the state of the terminal or the B-subscriber.

#### 20 OBJECT OF THE INVENTION

The object of the invention is to eliminate the above-mentioned drawbacks or at least to significantly alleviate them. A specific object of the invention is to disclose a new type of method and system 25 that will allow versatile utilization of the operating mode data of a user's terminal.

#### BRIEF DESCRIPTION OF THE INVENTION

The present invention relates to a method for 30 determining, saving and utilizing terminal operating mode data in a telecommunication system, in which method the user can set his terminal into two or more operating modes. The terminal is preferably a mobile station. According to the invention, the operating 35 mode of the terminal is changed. As a consequence of a change of operating mode, the terminal sends informa-

tion regarding the change of operating mode to a telecommunication server, using the technique of the telecommunication network available. The information regarding a change of operating mode is sent to the

5 telecommunication server e.g. in a short message or WAP message (WAP, Wireless Application Protocol) as used in the mobile communication network. The telecommunication server saves the operating mode updated by the terminal. The information regarding a change of

10 operating mode is sent to the telecommunication server automatically without any action on the user's part, or alternatively manually by the user. In addition, user-specific data is stored on the telecommunication server. This type of data may include e.g. identity of

15 user and/or terminal, terminal through which the user can be reached at different times, terminal setting data for reaching the user, the type of telecommunication connection available for reaching the user, IP-address of the terminal (IP, Internet Protocol) and

20 terminal location data.

The terminal operating mode data on the telecommunication server are not necessarily automatically public, but the operating mode data can be transmitted to other parties if the user allows it. Operating mode data visible to other users can additionally be divided into different visibility areas e.g. so that the operating mode data is shown with different degrees of accuracy to different parties.

In an embodiment of the invention, a connection is to be established to a user's terminal. The party wishing to establish contact with the user checks the operating mode data browsable by other users to determine the operating mode of the terminal and, after performing this check of the operating mode, makes a decision about establishing a connection to the user's terminal.

In an embodiment of the invention, on the basis of the operating mode data received, information regarding changes in its operating environment is sent to the terminal and the operating environment of the terminal is modified so as to make it consistent with the change information. 'Operating environment' refers e.g. to the applications contained in the terminal and to its user interface. In other words, the applications contained in the terminal and its operating environment are changed in accordance with the operating profile of the terminal. The required applications and information regarding changes are loaded into the terminal from the telecommunication network.

In an embodiment of the invention, the terminal operating mode data is used for directing advertising and/or services to the terminal.

In an embodiment of the invention, identity data identifying the user and/or the terminal is sent to the telecommunication server in connection with the transmission of operating mode data and, based on said identity data, the reachability chain associated with the user reachability management is altered in the telecommunication server so as to render it consistent with the received operating mode of the terminal. In other words, when the user makes a change in the operating profile of his terminal, information regarding the change of operating mode is transmitted to the reachability management system of the telecommunication server. The call control is changed so as to make it consistent with the said reachability chain. A user-specific reachability profile contained in the management system defines which reachability chain is to be used with each operating mode. Changes in the user-specific reachability profile can be made e.g. via a www-user interface.

The invention also relates to a system for determining, storing and utilizing terminal operating

mode data in a telecommunication system comprising a telecommunication network, a user's terminal connected to the telecommunication network. According to the invention, the system comprises a telecommunication server 5 for maintaining the active operating mode data regarding the user's terminal.

In an embodiment of the invention, the system comprises one or more memorandums containing information about one or more users and/or terminals.

10 In an embodiment of the invention, the system comprises an application server for the storage of settings regarding the applications and operation associated with different operating modes and for the transmission of the required settings regarding applications and operation to the terminal.

15 In an embodiment of the invention, the telecommunication server comprises one or more user-specific reachability profiles in which a reachability chain is defined.

20 In an embodiment of the invention, the system comprises a call control system connected to the telecommunication server and controlling call setup in accordance with the selected reachability chain. The call control system is e.g. an intelligent network 25 (IN, Intelligent Network).

25 In an embodiment of the invention, the system comprises a call control system connected to the telecommunication server and controlling call setup in accordance with a selected reachability chain. 'Call control system' preferably refers to an intelligent network.

30 In an embodiment of the invention, the terminal is a mobile station.

35 The present invention makes it possible for an A-subscriber establishing connection with a B-subscriber to first check the operating mode of the B-subscriber's terminal and only then decide about es-

tablishing a connection. Further, the present invention allows the operating environment of the terminal and the applications contained in it to be determined according to the operating profile valid at the time.

- 5 This provides e.g. the possibility that the terminal may contain different applications during working hours than during leisure.

The present invention makes it possible for advertising and services applied to the user's terminal to be directed according to mode data regarding the user and/or the user's terminal.

10 The present invention allows an operating mode selection made by the user via his terminal to be used in the control of a reachability management system as well.

15 **BRIEF DESCRIPTION OF THE DRAWINGS**

In the following, the invention will be described in detail by the aid of examples of its embodiments, wherein

Fig. 1 presents a preferred system according to the invention,

Fig. 2 presents a preferred system according to the invention

Fig. 3 presents a preferred system according to the invention

Fig. 4 presents a preferred system according to the invention

Fig. 5 presents a preferred example of a signal flow diagram representing the operation of a system as presented in Fig. 1,

Fig. 6 presents a preferred example of a signal flow diagram representing the operation of a system as presented in Fig. 2.

35 Fig. 7 presents a preferred example of a signal flow diagram representing the operation of a system as presented in Fig. 3, and

Fig. 8 presents a preferred example of a signal flow diagram representing the operation of a system as presented in Fig. 4.

## 5 DETAILED DESCRIPTION OF THE INVENTION

The system presented in Fig. 1 comprises terminals MS1 and MS2, which preferably are mobile stations. The mobile stations are connected to a telecommunication network NET, which preferably is a mobile communication network. Connected to the mobile communication network NET is a telecommunication server DP. The function of the telecommunication server DP is to maintain information regarding the mobile stations that use it and especially to monitor the active operating mode of the mobile station. In this example, 'operating mode' refers to the operating profile of the mobile station. The operating profile may be, for example, "At work", "Having lunch" or "At leisure". The telecommunication server DP comprises a memorandum MEM, in which the operating modes of the mobile stations using it are stored. Additional information regarding the terminal that can be stored in the memorandum includes e.g. the identity of the user and/or the terminal, the type of terminal via which the user is reachable at each particular time, or terminal setting data for reaching the user. Moreover, the memorandum MEM may contain information indicating the type of telecommunication connection over which the user can be reached via his terminal, the IP address of the terminal or location data for the terminal. 'Telecommunication server' DP preferably refers to a server computer provided with the applications necessary for achieving the functionalities provided by the invention.

Fig. 5 gives a more detailed description of the operation of the system presented in Fig. 1. The connection between A-subscriber (calling subscriber)

and B-subscriber (called subscriber) is set up via the telecommunication server DP. When desirable, the A-subscriber and/or the B-subscriber update their own contact information, arrows 50 and 51, in the telephone memorandum maintained in the telecommunication network. In addition, the A-subscriber can maintain a second memorandum MEM1 of information about B-subscribers known to him, arrow 52. The second memorandum MEM1 is used for the storage of e.g. all contact information concerning B-subscribers, such as telephone numbers, IP numbers, first names etc., arranged and selected by the A-subscriber.

The activity of the memorandum MEM is based on a function in which the memorandum MEM monitors the operating mode of the terminal of each user that makes use of it, using the techniques of the telecommunication network available in each case. The memorandum MEM monitors the state of reachability of the terminal used by the B-subscriber and its level of communication, either automatically or under user control, arrow 53. In this case, the memorandum MEM contains, in addition to contact information regarding the user, e.g. data indicating which terminal can be used to reach him at the moment. Also stored in the memorandum MEM is information giving the current settings in the user's terminal for reaching him. It is further possible to store in the memorandum MEM information indicating the quality of telecommunication network coverage of the user at each moment and his current location.

When the A-subscriber wishes to establish connection with a B-subscriber, the A-subscriber first sets up a connection via a terminal used by him to the second memorandum MEM1 on the telecommunication server DP, where he can browse the operating mode data of desired B-subscribers, arrow 54. According to the example presented in Fig. 1, the memorandum MEM and the

second memorandum MEM1 are disposed on the same telecommunication server DP. However, this is only one example of possible arrangements. The second memorandum MEM1 of the A-subscriber may also be placed on a different telecommunication server, which, using client-server type connection software, fetches the information concerning the operating mode of desired B-subscribers into the second memorandum MEM1. After this, the information in the second memorandum MEM1 can be updated automatically e.g. at certain intervals or when certain criteria concerning the state of the telecommunication network are met. The data are updated e.g. when the user's terminal supports telecommunication networks of different types and its data transmission function is transferred e.g. from a GSM network to a WLAN or Bluetooth network (WLAN, Wireless Local Area Network). Alternatively, the A-subscriber may, using an application in the terminal, load the operating mode data associated with B-subscribers into the memory of the terminal, where the A-subscriber can subsequently select a desired person. If there is an accelerometer installed in the B-subscriber's terminal, then it is possible to transmit to the A-subscriber's terminal information indicating whether the terminal specified by the B-subscriber is in use or not. In addition, after connection setup, the accelerometer would provide the A-subscriber with information as to where the B-subscriber is located three-dimensionally.

The A-subscriber can see from the operating mode data for a desired B-subscriber whether the B-subscriber is reachable or not. If the B-subscriber is reachable, then the A-subscriber establishes a connection with the B-subscriber using an application in the terminal via a telephone memorandum provided in the telecommunication network. In connection with the call setup, the B-subscriber receives information regarding

the A-subscriber trying to establish connection with him, arrow 55. This information may include e.g. the A-subscriber's name, picture, ringing tone, URL address, etc. in connection with the call setup, the B-subscriber can also be given information regarding the current state of the A-subscriber trying to establish contact. In addition, during the connection, the B-subscriber's terminal can collect information as to which other persons included in the memorandum MEM1 classified by the A-subscriber are located in the vicinity of the B-subscriber. The collection of this information is performed using e.g. a Bluetooth link and the information is transmitted to the A-subscriber via the telecommunication server DP.

The system represented by Fig. 2 comprises a terminal MS, which preferably is a mobile station. The mobile station MS is connected to a telecommunication network NET, which preferably is a mobile communication network. Connected to the mobile communication network NET is a telecommunication server DP. The telecommunication server DP is provided with a reachability management system. The reachability management system additionally contains a database for the storage of definition data associated with reachability. A connection is provided from the telecommunication server DP to an intelligent network IN. 'Telecommunication server' DP preferably refers to a server computer provided with necessary applications for achieving the functionalities required by the invention. Fig. 6 provides a more detailed description of the operation of a system as illustrated in Fig. 2.

When the user changes his active operating profile in his mobile telephone, e.g. an SMS or WAP message concerning the change of operating mode is transmitted to the telecommunication server DP, arrow 60. The data relating to the updating of the operating mode can be sent to the telecommunication server DP

automatically without any action on the user's part when the operating mode of the terminal is changed, or manually by the user. 'Operating mode' here refers e.g. to the operating profile of a mobile station. The 5 operating mode is e.g. "At work", "Having lunch" or "At leisure".

The reachability management system changes the user's reachability in accordance with a reachability profile associated with the mobile telephone, 10 arrow 61. The user can himself enter definitions e.g. via a www user interface as to what sort of mobile telephone profiles a change in the reachability chain is to be associated with and in what way. In a message sent by the user, identity data relating to the user 15 as well as the name of the profile are transmitted. The call control system alters the control of personal reachability in real time in accordance with the defined reachability chain. With a change in the reachability chain, the call control is changed in the intelligent network IN, arrow 62. Although this example 20 represents an actual call control implementation utilizing an intelligent network, other call control implementations may also be used.

The system presented in Fig. 3 comprises a 25 terminal MS, preferably a mobile station. The mobile station is connected to a telecommunication network NET, which preferably is a mobile communication network. Connected to the mobile communication network NET is a telecommunication server DP. The function of 30 the telecommunication server DP is to monitor the currently active operating mode of the terminal. 'Operating mode' here preferably refers to an operating profile, which is e.g. "At work", "Having lunch" or "At leisure". The telecommunication server DP is further 35 connected to an application server PROG. 'Telecommunication server' DP preferably refers to a server computer provided with necessary applications for achiev-

ing the functionalities required by the invention. Fig. 7 gives a more detailed description of the operation of the system presented in Fig. 3.

This example illustrates the way in which the management of the applications in the terminal can be tied to place and situation. When the operating mode of the terminal changes, it sends information regarding the change of operating mode to the telecommunication server DP, arrow 70. The change of operating mode is transmitted to the telecommunication server DP automatically without any action on the user's part, or alternatively manually by the user. The telecommunication server DP transmits the change of operating mode to the application server PROG, arrow 71. Based on the information received, the application server PROG determines what changes are to be made in the user's terminal. The application server PROG sends the change information to the telecommunication server DP, which transmits it further to the user's terminal MS, arrows 72 and 73. The user's terminal MS checks whether the components defined by the change information already exist in the terminal, arrow 74. If this is not the case, then the terminal MS will fetch the missing components from the application server PROG, arrow 75.

The above-described example allows the variety of applications in the terminal to be changed so as to make it consistent with the operating profile. If the operating profile of the terminal is "At work", then the variety of applications available to the user of the terminal and/or the user interface are/is different than when the operating profile is "At leisure".

The system illustrated in Fig. 4 comprises a terminal MS, preferably a mobile station. The mobile station is connected to a telecommunication network NET, which preferably is a mobile communication net-

work. Connected to the mobile communication network NET is a telecommunication server DP. The function of the telecommunication server DP is to maintain information regarding the mobile stations that use it and especially to monitor the active operating mode of the mobile station. In this example, 'operating mode' refers to the operating profile of the mobile station. The operating profile may be e.g. "At work", "Having lunch" or "At leisure". The telecommunication server DP comprises a memorandum MEM, in which the operating modes of the mobile stations using it are stored. Additional information regarding the terminal that can be stored in the memorandum includes e.g. the identity of the user and/or the terminal, the type of terminal via which the user is reachable at each particular time, or terminal setting data for reaching the user. Further, the memorandum MEM may contain information indicating the type of telecommunication connection over which the user can be reached via his terminal, the IP address of the terminal or location data for the terminal. One or more service providers SP may establish connection with the telecommunication server DP. 'Telecommunication server' DP preferably refers to a server computer provided with the applications necessary for achieving the functionalities provided by the invention. Fig. 8 presents a more detailed description of the operation of the system illustrated in Fig. 4.

This example gives a description of how the operating mode data of the mobile station can be utilized for directing advertising and services to the user's mobile station. When the operating mode of the mobile station is changed, the mobile station sends a notice regarding the change of operating mode to the telecommunication server DP, arrow 80. A change of the operating mode data can be transmitted to the telecommunication server DP automatically without any action

on the user's part, or alternatively manually by the user. The user may also give other parties a permission to utilize the operating mode data transmitted by him. A service provider SP utilizing the operating mode data may log in on the telecommunication server DP and monitor the changes of operating mode of a user if the user has given a permission for this, arrows 81 and 82.

The operating mode data to be shown to outside parties can be divided into visibility areas, allowing the operating mode of a user's mobile station to be shown with different degrees of accuracy to different parties. Thus, all service providers will not necessarily receive information of equal accuracy. A service at the place of employment may learn that the user is "At work - Having lunch", whereas others can only see that the user is "At work". Again, a service station may receive the information that the user is "On the way home - in car", so the service station can send a fuel offer to the user's mobile station. There are numerous applications that can be found for the utilization of the operating mode data. On the basis of the operating mode, a service provider SP sends an advertisement or some other service to the user's terminal MS via the telecommunication server DP, arrows 83 and 84.

The method described above makes it possible to transmit to the terminal messages focused according to the state of the user and/or the terminal.

The invention is not restricted to the examples of its embodiments described above; instead, many variations are possible within the scope of the inventive idea defined in the claims.

## CLAIMS

1. Method for determining, storing and utilizing operating mode data of a terminal in a telecommunication system, in which method the user can set his terminal into two or more operating modes,
  - 5 characterized in that the method further comprises steps wherein:
    - the operating mode of the terminal is changed;
    - information regarding the change of the operating
  - 10 mode is sent from the terminal to a telecommunication server, using a technique employed in the telecommunication network available; and
  - 15 the change of the operating mode of the terminal is saved on the telecommunication server.
2. Method according to claim 1, characterized in that the operating mode data existing in the telecommunication server is transmitted into user-specific information browsable by other users.
3. Method according to claim 1 or 2, characterized in that the operating mode data browsable by other users is divided into visibility areas.
4. Method according to claim 1, 2 or 3, characterized in that, when a connection to the user's terminal is to be established, the party wishing to establish connection with the user checks the operating mode data browsable by other users to determine the operating mode of the terminal; after this check of the operating mode, a decision is made about the establishment of the connection to the user's terminal.
5. Method according to claim 1, 2, 3 or 4, characterized in that the operating mode data of the terminal is updated in the aforesaid telecommunication server when the user changes the operating profile of his terminal.

6. Method according to claim 1, 2, 3, 4 or 5, characterized in that the number of parties to which the aforesaid terminal operating mode data is delivered is limited.

5       7. Method according to claim 1, characterized in that one or more of the following data items are stored in the operating mode data on the telecommunication server:

identity of the user and/or the terminal;

10      terminal through which the user can be reached at different times;

terminal setting data for reaching the user;

the type of telecommunication connection available for reaching the user;

15      IP-address of the terminal;

location data of the terminal.

8. Method according to claim 1, characterized in that information regarding the operating mode of the terminal is sent from the terminal to the telecommunication server automatically without any action on the user's part when the operating mode of the terminal is changed.

9. Method according to claim 1, characterized in that information regarding the operating mode of the terminal is sent from the terminal to the telecommunication server manually by the user when the operating mode of the terminal is changed.

10. Method according to claim 1, 5, 8 or 9, characterized in that

30      based on the operating mode data received, information regarding the changes in its operating environment is sent to the terminal; and

35      the operating environment of the terminal is changed to make it consistent with the information of change.

11. Method according to claim 10, characterized in that the applications in and/or the

user interface of the terminal are changed in accordance with the aforesaid change information of change.

12. Method according to claim 1, 2, 3, 4, 5, 6, 7, 8 or 9, characterized in that the operating mode data of the terminal is utilized for directing advertising and/or services to the terminal.

13. Method according to claim 1, 5, 8 or 9, characterized in that

10 identity data identifying the user and/or the terminal is sent to the telecommunication server in connection with the transmission of the operating mode data; and

15 based on said identity data, a reachability chain associated with user reachability management is altered in the telecommunication server so as to render it consistent with the received operating mode of the terminal; and

the call control is changed in accordance with the aforesaid reachability chain.

20 14. Method according to claim 13, characterized in that the reachability chain is defined in a user-specific reachability profile.

25 15. Method according to claim 1, 13 or 14, characterized in that the user's reachability profile is changed via a www-user interface.

16. Method according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15, characterized in that the terminal is a mobile station.

30 17. Method according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16, characterized in that the information regarding a change of the operating mode of the terminal is transmitted to the telecommunication server in the form of a SMS or WAP message.

35 18. System for determining, storing and utilizing operating mode data of a terminal in a telecommunication system, the system comprising:

a telecommunication network (NET)  
a user's terminal (MS) communicating with the  
telecommunication network (NET)

characterized in that the system

5 further comprises:

a telecommunication server (DP) for maintaining  
the active operating mode data of the user's terminal.

10 19. System according to claim 18, characterized  
in that the system comprises one or more  
memorandums (MEM1, ..., MEMn) containing information  
about one or more users and/or terminals.

15 20. System according to claim 18 or 19,  
characterized in that the system comprises an  
application server (PROG) for the storage of settings  
regarding applications and operation associated with  
different operating modes and for the transmission of  
the required settings regarding applications and op-  
eration to the terminal.

20 21. System according to claim 18, 19 or 20,  
characterized in that the telecommunication  
server (DP) comprises one or more user-specific reach-  
ability profiles in which a reachability chain is de-  
fined.

25 22. System according to claim 18, 19, 20 or  
21, characterized in that the system com-  
prises a call control system (IN) connected to the  
telecommunication server (DP) and controlling call  
setup in accordance with the reachability chain se-  
lected.

30 23. System according to claim 22, charac-  
terized in that the call control system (IN) is  
an intelligent network.

35 24. System according to claim 18, 19, 20, 21,  
22 or 23, characterized in that the terminal  
(MS) is a mobile station.

1/4

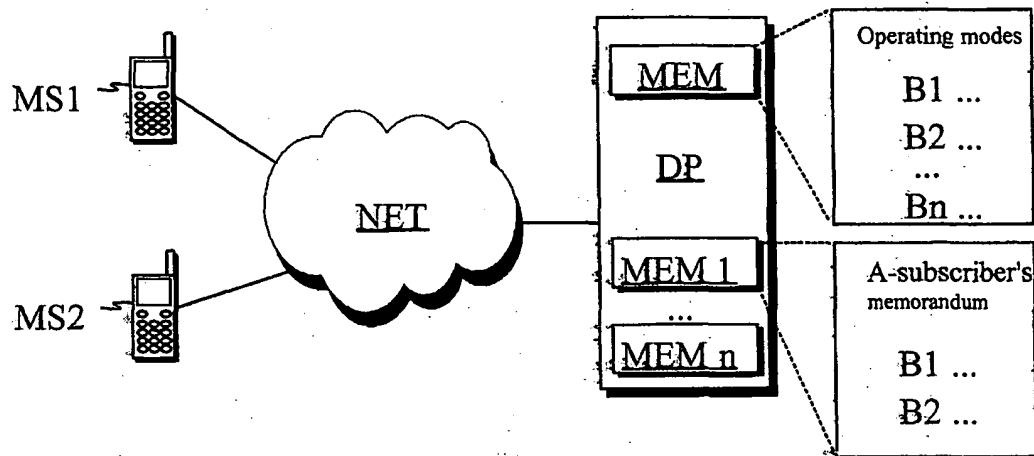


Fig. 1

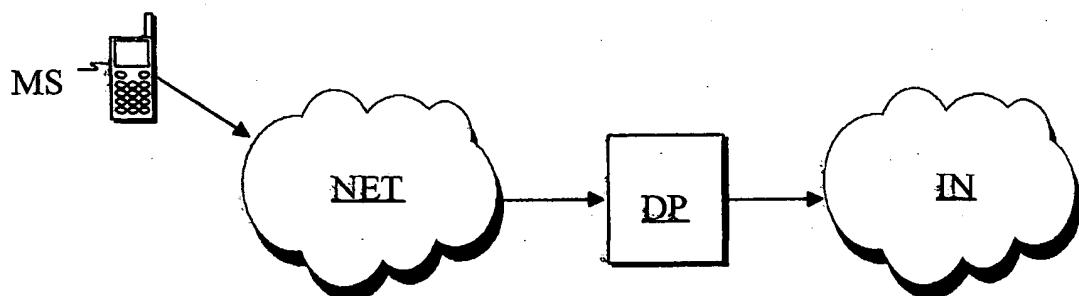


Fig. 2

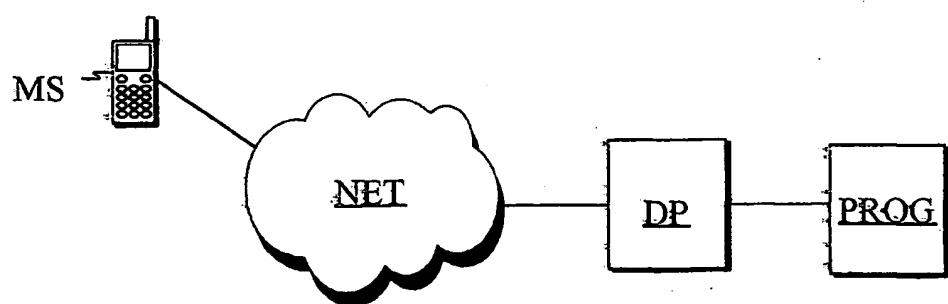


Fig. 3

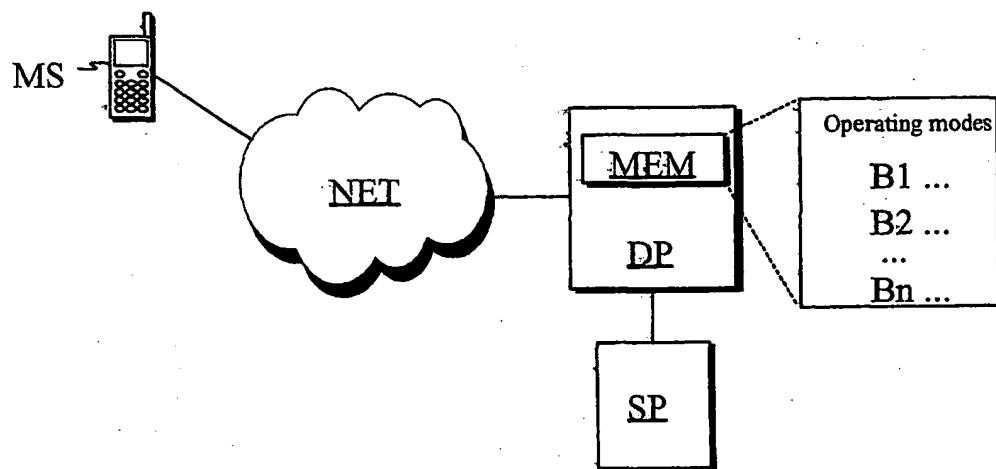


Fig. 4

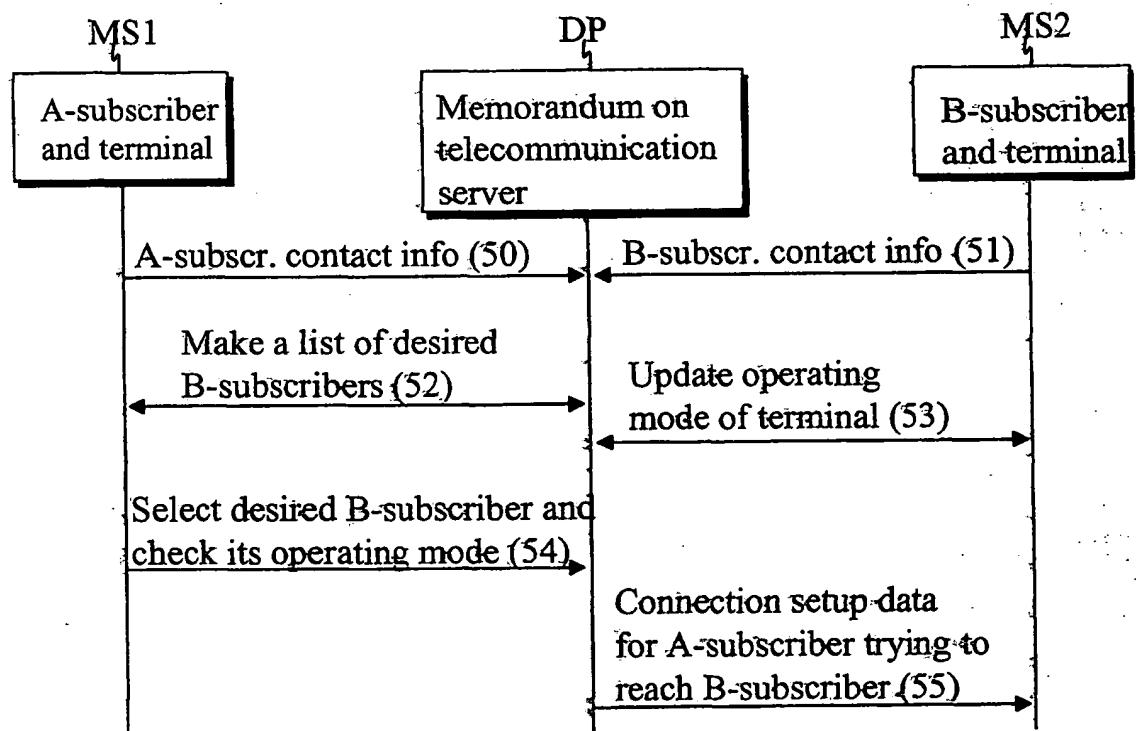


Fig. 5

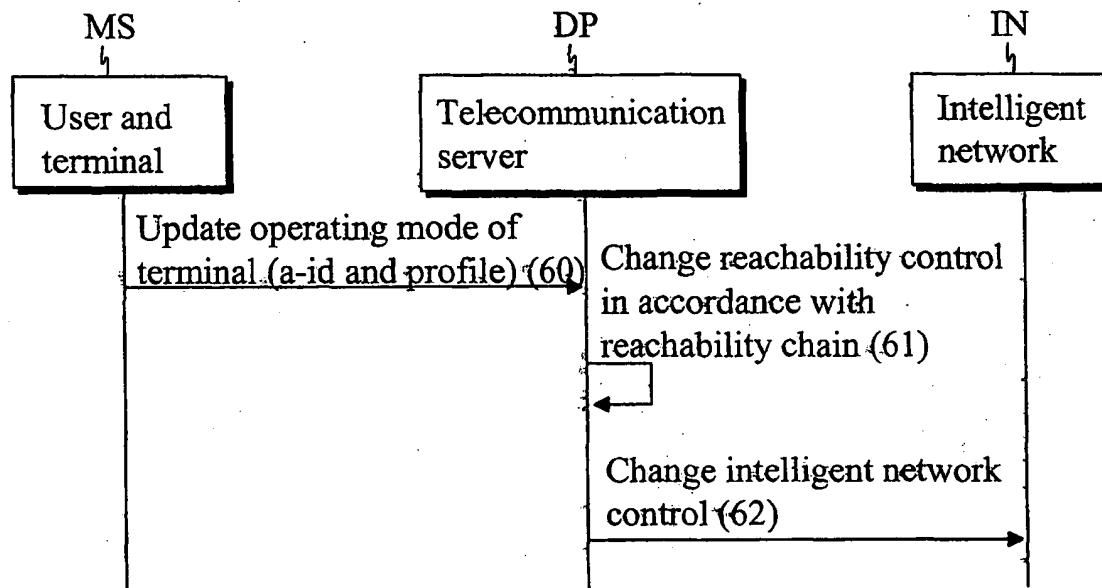


Fig. 6

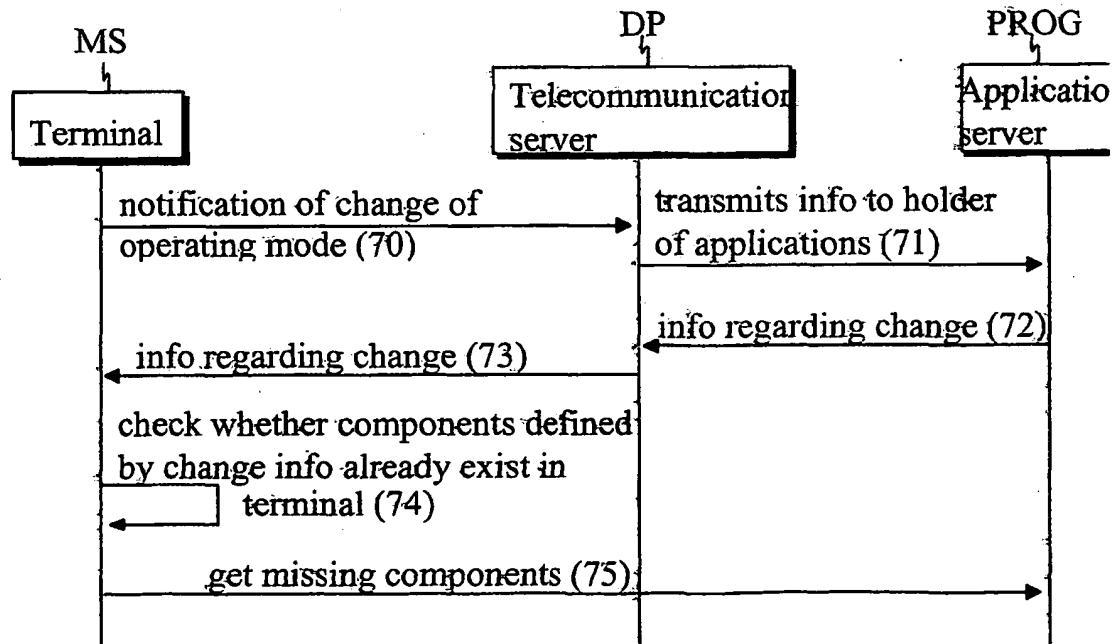


Fig. 7

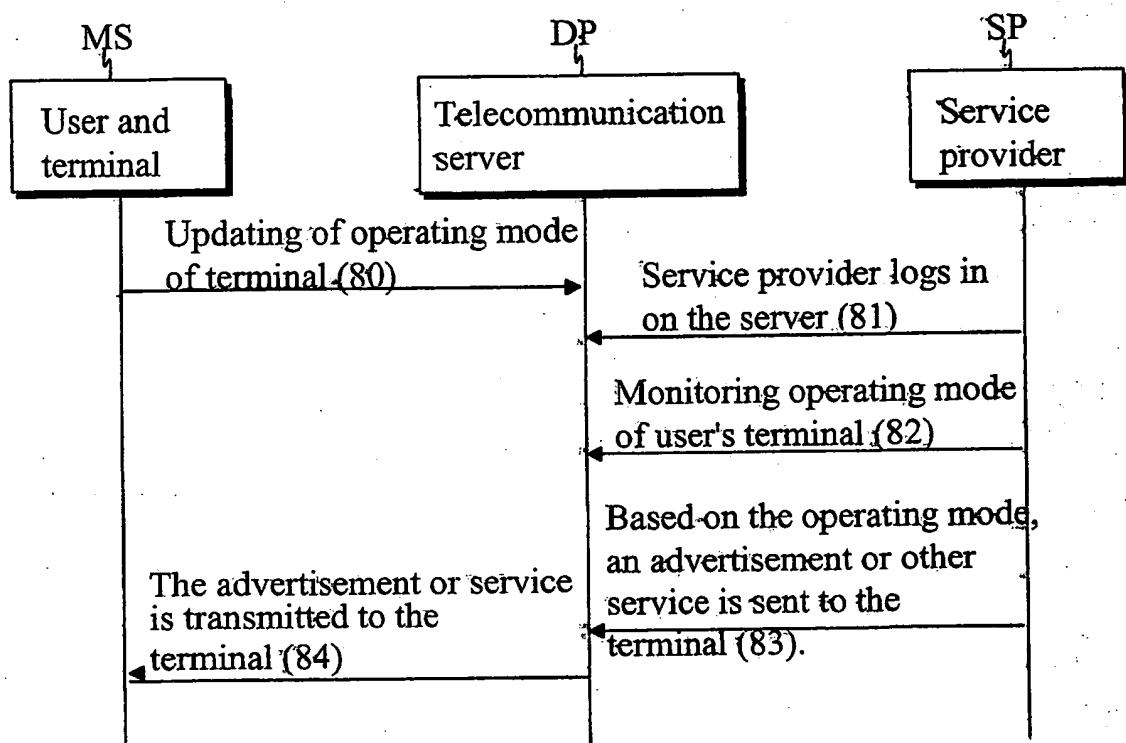


Fig. 8

## INTERNATIONAL SEARCH REPORT

|                               |
|-------------------------------|
| International application No. |
| PCT/FI 02/00298               |

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/38

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages    | Relevant to claim No. |
|-----------|---|-----------------------|
| X         | WO 0018166 A1 (DO, VAN, THANK), 30 March 2000<br>(30.03.00)                           | 1,2,16,18,<br>19,24   |
| A         | --  | 3-15,17,<br>20-23     |
| P,X       | EP 1098489 A2 (NOKIA CORPORATION), 9 May 2001<br>(09.05.01), page 1, line 4, abstract | 1-24                  |
| X         | EP 0781067 A2 (AT&T CORP), 25 June 1997 (25.06.97)                                    | 1,16,17,18,<br>19     |
| A         | --  | 2-15,20-24            |

Further documents are listed in the continuation of Box C.  See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search   | Date of mailing of the international search report                           |
|---|--|
| 17 Sept 2002  | 19-09-2002   |
| Name and mailing address of the ISA/<br>Swedish Patent Office<br>Box 5055, S-102 42 STOCKHOLM<br>Facsimile No. + 46 8 666 02 86 | Authorized officer<br><br>Thomas Tholin/EK<br>Telephone No. + 46 8 782 25 00 |

## INTERNATIONAL SEARCH REPORT

Information on patent family members

02/09/02

International application No.

PCT/FI 02/00298

| Patent document cited in search report |         | Publication date |          | Patent family member(s) |                                     | Publication date                 |
|--|---------|------------------|----------|-------------------------|-------------------------------------|----------------------------------|
| WO                                     | 0018166 | A1               | 30/03/00 | AU<br>NO                | 5765799 A<br>984401 A               | 10/04/00<br>22/03/00             |
| EP                                     | 1098489 | A2               | 09/05/01 | JP                      | 2001204055 A                        | 27/07/01                         |
| EP                                     | 0781067 | A2               | 25/06/97 | CA<br>JP<br>US          | 2187385 A<br>9187080 A<br>6134454 A | 19/06/97<br>15/07/97<br>17/10/00 |

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**